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Pest Alert

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Plant Protection and Quarantine

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Pink Hibiscus Mealybug, *Maconellicoccus hirsutus* (Green)

What Is It?

The pink hibiscus mealybug is a serious pest of many forest and fruit trees, ornamentals, root crops, and vegetables. Thought to be native to southern Asia, the mealybug now occurs in most tropical parts of the world (including Africa, Australia, the Middle East, and Oceania) and several areas within North, Central, and South America. In the United States, the pink hibiscus mealybug was first detected in Hawaii in 1984 and later appeared in Puerto Rico and the U.S. Virgin Islands in the 1990s. The pest has also been detected in California, Florida, Louisiana, and Texas. It is now found throughout the Caribbean, where it attacks many host plants of economic importance.

If the mealybug were to spread across the southern United States, damage to the U.S. agriculture and nursery industries could approach \$1 billion annually.

Host Range

To date, the pink hibiscus mealybug has been found on 215 different plant species. This encompasses a wide range of unrelated hosts, including hibiscus, citrus, coffee, sugarcane, teak, grapevine, cotton, soybean, and cocoa, just to name a few. The broad host range of the mealybug will continue to expand if the pest spreads to new geographic areas.



Adult female (arrow) and immatures. (Photo by Marshall Johnson of the Department of Entomology, University of Hawaii at Manoa, and used with permission.)

Description

The pink hibiscus mealybug is also known as the grape mealybug, the grapevine mealybug, the pink mealybug, and the hibiscus mealybug. While adults of both sexes are soft-bodied and about one-eighth inch (3 mm) long, the males are usually smaller than the females. The females are pink, wingless, and oval-shaped, and their bodies are covered by a white, mealy wax. Males have two long, waxy tails and a pair of wings, and are able to fly.

The mature female lays between 150 and 654 eggs in an egg sac of white wax, known as an ovisac. Ovisacs are usually deposited in clusters on the twigs, branches, or bark of the host plant but sometimes on the plant's leaves and terminal ends. Eggs hatch into first-instar (first-nymphal stage) nymphs, also



Saman tree killed by heavy pink hibiscus mealybug infestation. White mealybug egg sacs cover the trunk and branches. (Photo by Tony Cross of the International Institute of Biological Control, Centre for Agriculture and Biosciences International, and used with permission.)

known as "crawlers," which are very mobile. Nymphs resemble female adults. The entire life cycle of the pink hibiscus mealybug takes about 23 to 30 days to complete.

Dispersal

The pink hibiscus mealybug is most likely to spread through the movement of infested nursery stock and commercial shipments of agricultural plants. While the pest is not very mobile by itself, the ovisacs, crawlers, and adult males can easily migrate via wind and moving water. Mealybugs in any developmental stage can be carried by people and animals. Additionally, crawlers, nymphs, and adult females have been known to travel short distances over the ground to get to other host plants in adjoining fields.



Infested hibiscus plant. (Photo by APHIS' Dale Meyerdirk.)

Windborne mealybugs can start new infestations in areas where the climate is colder than the species normally prefers. In cooler climates, the pest may overwinter in the soil or in protected parts of the host plant (e.g., leaf scars, cracks and crevices in bark, inside fruit bunches, or crumpled leaf clusters). In warmer climates, the mites stay active and reproduce year-round, creating as many as 15 generations each year.

Injury to Living Plants

The pink hibiscus mealybug forms colonies on the host plant. If left undisturbed, the colonies will grow into large masses of white, waxy deposits on branches, fruiting structures, leaves, and even whole plants, including large trees.

As it feeds on the soft tissues of the plant, the mealybug injects a toxic saliva that causes malformed growth of leaves and shoots, stunting, and occasionally death. Leaves show a characteristic curling, similar to damage caused by viruses. Heavily infested plants have shortened internodes, leading to rosetting or a "bunchy-top" appearance. A black, sooty mold often develops on the mealybug's heavy, honeydew



"Bunchy top" in citrus. (Photo by APHIS' Dale Meyerdirk.)

secretions, which are deposited on an infested plant's leaves and stems. When fruits are infested, they can be entirely covered with the mealybug's white, waxy coating. The pest may even attack the root systems in some plants (e.g., peanuts, potatoes).

Economic Losses

In many countries, the pink hibiscus mealybug is primarily restricted to Hibiscus and is not of major concern, possibly because the pest's natural enemies provide control. However, in areas without such natural control, the mealybug can become a serious pest and cause significant economic losses.

For example, in India, the mealybug is a major pest of grapes, reducing yields 50 to 100 percent. In addition, annual losses in Grenada were estimated at \$3.5 million before the establishment of a biological control program. In various other Caribbean islands, the mealybug has attacked several species of ornamental plants that are important to the tourist industry. Affected countries have also suffered serious trade losses because other countries would not accept shipments of agricultural produce.

Biological Control

There are a number of known natural enemies for the mealybug, including the coccinellid predator *Cryptolaemus montrouzieri* and the parasites *Anagyrus kamali* and *Gyranusoidea indica*. In Egypt and India, biological control agents have been quite successful in suppressing the pink hibiscus mealybug. At present, 21 parasites and 41 predators are known to attack this pest worldwide.

The U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) is charged with protecting American agriculture from exotic plant pests such as the pink hibiscus mealybug. APHIS has developed a successful biological control program that is being implemented in the United States and the Caribbean. The introduction of specific natural enemies has dramatically reduced mealybug populations in infested areas. Biological control has proven to be the best long-term management option for this pest.

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